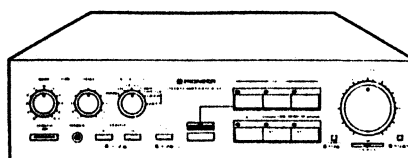


Service Manual

**CIRCUIT DESCRIPTIONS
REPAIR & ADJUSTMENTS**



**ORDER NO.
ARP1234-A**

STEREO AMPLIFIER

A-44(BK)

MODEL A-44 (BK) COMES IN THREE VERSIONS DISTINGUISHED AS FOLLOWS:

Type	Power requirement	Export destination
HEZ	AC220V, 240V (switchable)	West Germany
HE	AC220V, 240V (switchable)	European continent
HB	AC220V, 240V (switchable)	United Kingdom

- This service manual is applicable to the A-44 (BK)/HEZ, HE and HB types.
- As to the HE and HB types, please refer to page 17.

CONTENTS

1. EXPLODED VIEWS AND PARTS LIST	3	4. SCHEMATIC DIAGRAM	11
2. PACKING	6	5. ELECTRICAL PARTS LIST	14
3. P.C. BOARDS CONNECTION DIAGRAM	7	6. FOR HE AND HB TYPES	17

Line voltage selection (HE, HEZ and HB types)

Line voltage can be changed with following steps.

- 1. Disconnect the AC power cord.
- 2. Remove the top cover.
- 3. Change the connection wire (To Power transformer) of Terminal No. 3 (WHITE) as follows.

Voltage	Terminal No. 3	Terminal No. 5
220V	White wire	
240V		White wire

1. EXPLODED VIEWS AND PARTS LIST

NOTES:

- Parts without part number cannot be supplied.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your Parts Stock Control, the fast moving items are indicated with the marks **★★** and *****.
★★ GENERALLY MOVES FASTER THAN *
This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- Parts marked by " $\odot$ " are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

Parts List of Exterior

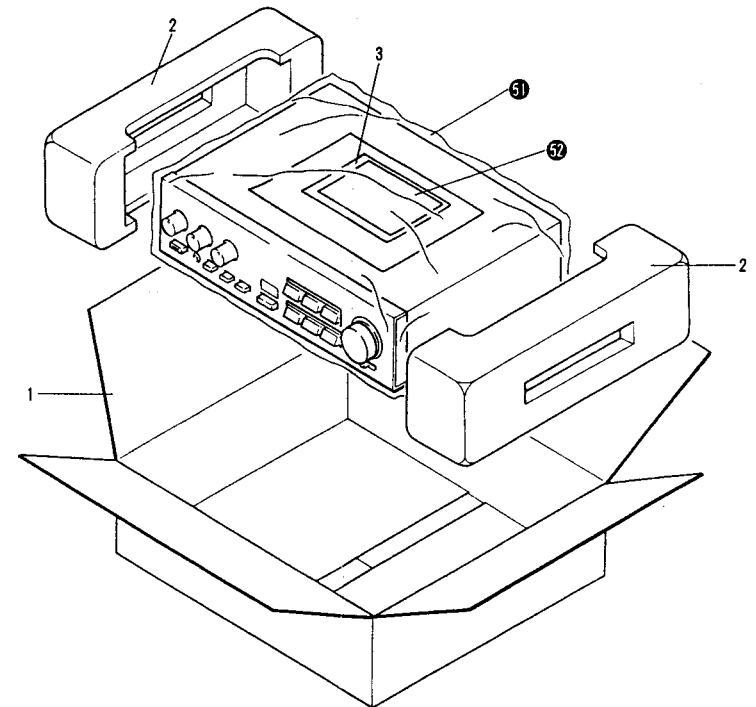
Mark	No.	Part No.	Description
Δ ★★	1	2SA1516	Transistor (Q3, Q4)
Δ ★★	2	2SC3907	Transistor (Q1, Q2)
Δ	3	ACG1003	Power capacitor (0.01 μ F/AC400V, C1)
Δ *	4	ATS1040	Power transformer (220V/240V, T1)
Δ ★★	5	ASG-552	Push switch (POWER, S1)
Δ ★★	6	AEK-017	Fuse (T2A/250V, FU1)
	7	AEC1032	Leg assembly
	8	AMD1004	Panel base assembly
	9	ANB1051	Front panel assembly
	10	AAB1011	Knob (VOLUME)
	11	AAB1012	Knob (TONE)
	12	AAD1060	Knob (POWER)
	13	AAD1061	Knob (SPEAKER)
	14	AAD1062	Function knob (PHONO)
	15	AAD1063	Knob (CD DIRECT)
	16	AAD1064	Function knob (TUNER)
	17	AAD1065	Function knob (CD)
	18	AAD1067	Function knob (TAPE1)
	19	AAD1068	Function knob (TAPE2)
	20	AAD1070	Knob (LOUDNESS)
	21	AAK1124	CD Direct plate
	22	AAT-110	Indicator lens C
	23	ANE1059	Bonnet
	24	ABH1015	Coil spring
	25	ABH1019	Coil spring
	26	AEC-525	Nylon rivet
	27	AEP-313	Mica seat
	28	ABA-115	Screw
	29	ABA-258	Screw
	30	BBZ30P080FMC	Screw
Δ	31	ADG-068	AC Power cord
	32	BBZ30P080FZK	Screw
	33	NK70FUC	Nut
	34	NK90FUC	Nut
	35	VBZ30P080FMC	Screw

Mark	No.	Part No.	Description
	36	VMZ30P060FMC	Screw
	37	AWZ1208	AF complex assembly
	38	AWZ1209	Tone, Function assembly
	39	AWT1003	Line filter assembly
★★	40	ASU1001	Remote slide rotary switch (REC SELECTOR)
	41	AAD1066	Function knob (VIDEO/AUX)
	42	AMR1088	Joint bar
	43	ANG1088	Ring (EARTH)
	44	AAT-118	Indicator lens C
	45	BBZ30P080FCU	Screw
	101		Volume assembly
	102		Speaker switch assembly
	103		SP Terminal assembly
	109		Transformer frame
	105		Terminal (GND)
	106		Chassis
	107		Rear panel
	108		Bottom plate
	109		Transframe
	110		Switch holder
	111		P.C.B. Holder
	112		Heat sink
	113		Binder
	114		Plate (EARTH)

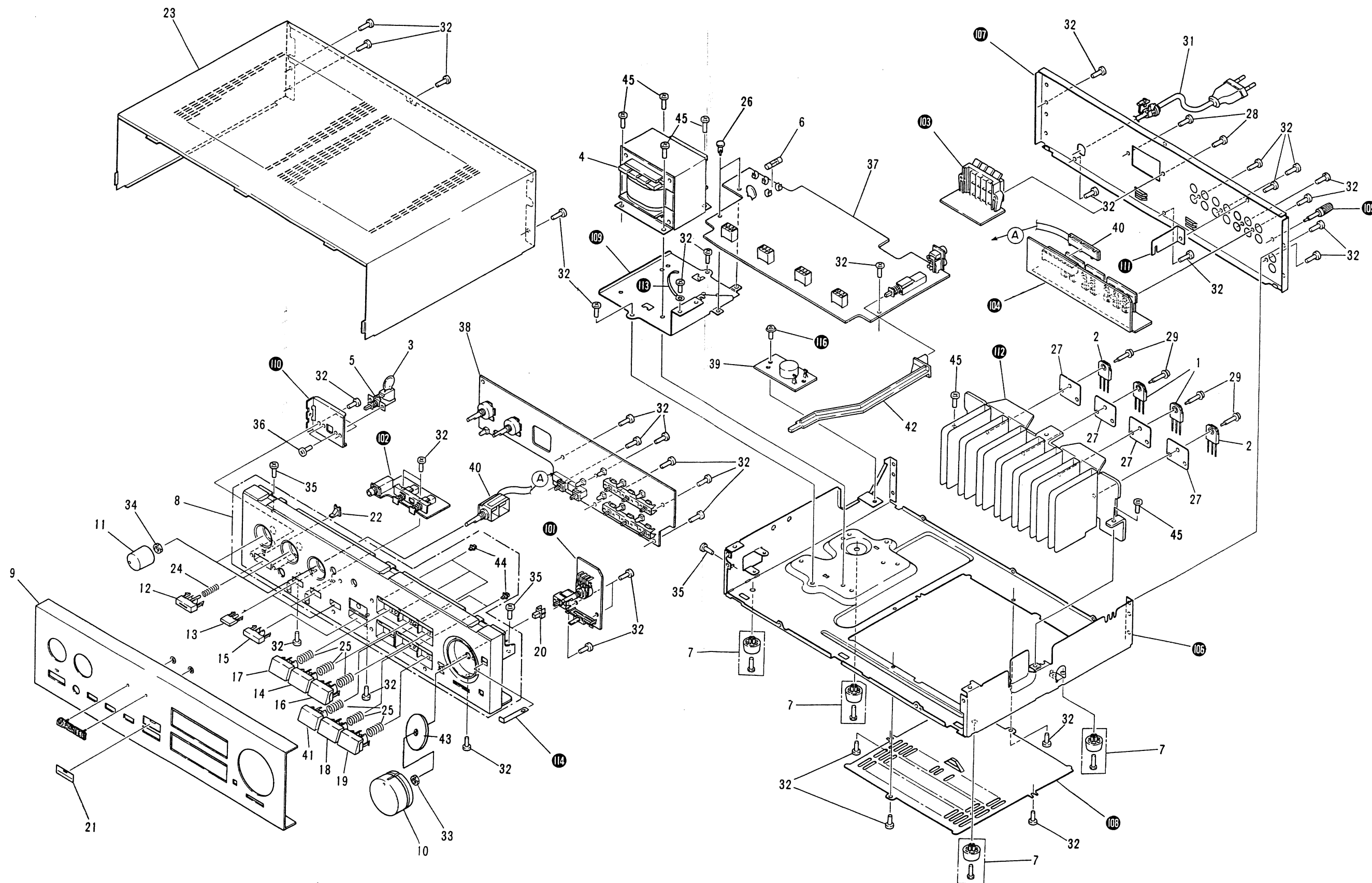
2. PACKING

Parts List of Packing

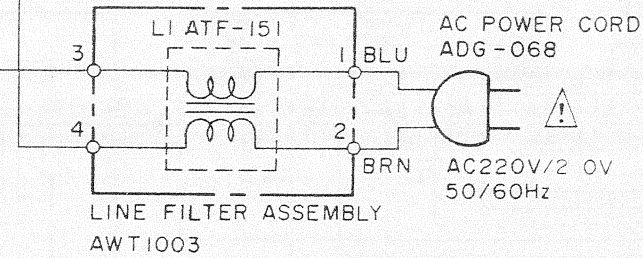
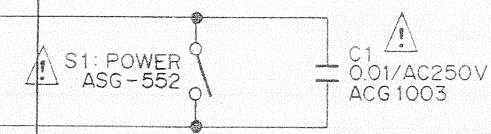
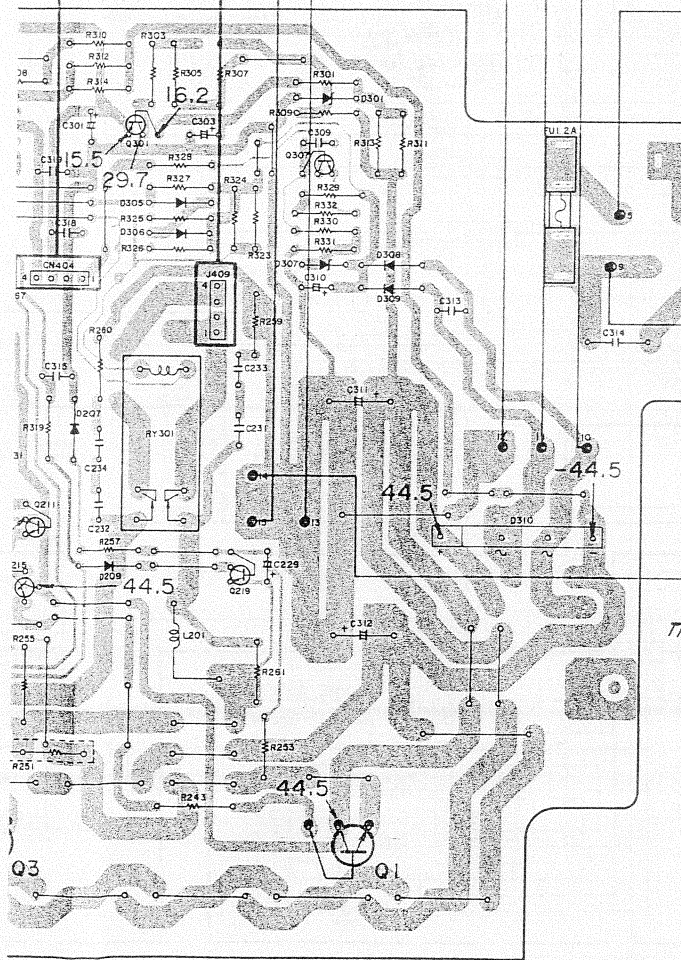
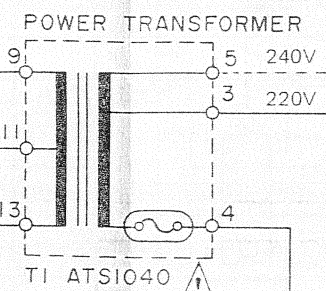
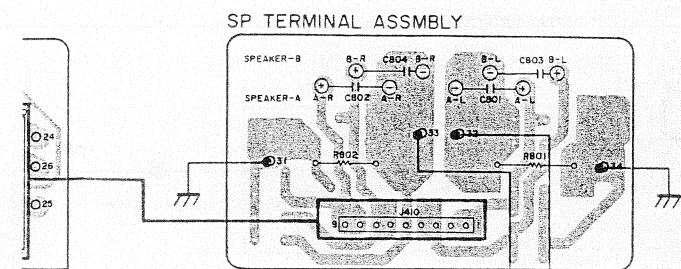
Mark	No.	Part No.	Description
	1	AHD1109	Packing case
	2	AHA1015	Front rear pad
	3	ARC1018	Operating instructions
	51		Seat
	52		Warranty card



Exterior

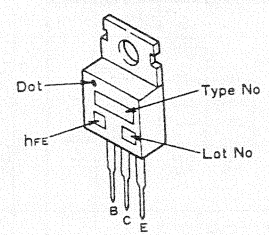


9219

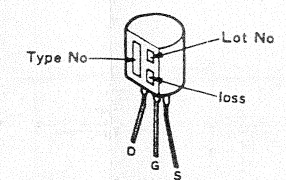


External Appearance of Transistors and ICs

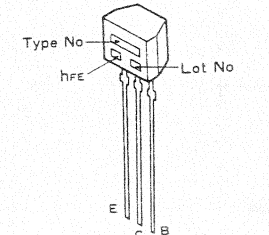
2SC2591
2SA1111



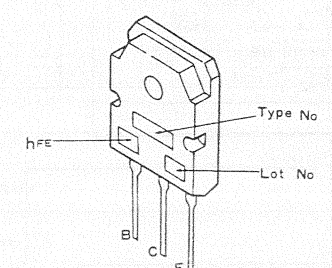
2SK170



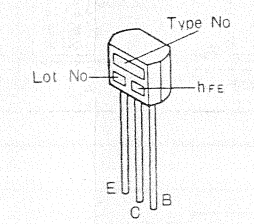
2SC2458



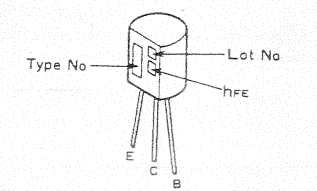
2SC3907
2SA1516



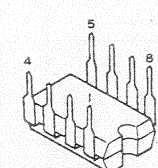
2SA1115
2SC2603



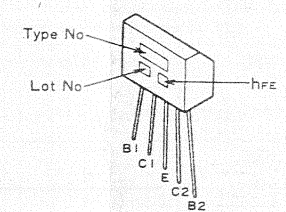
2SA992
2SC1845



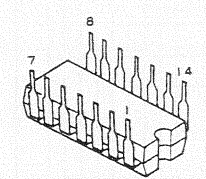
M5210P



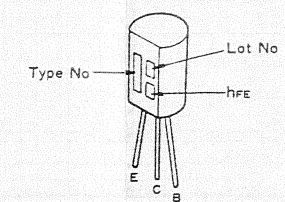
2SA979



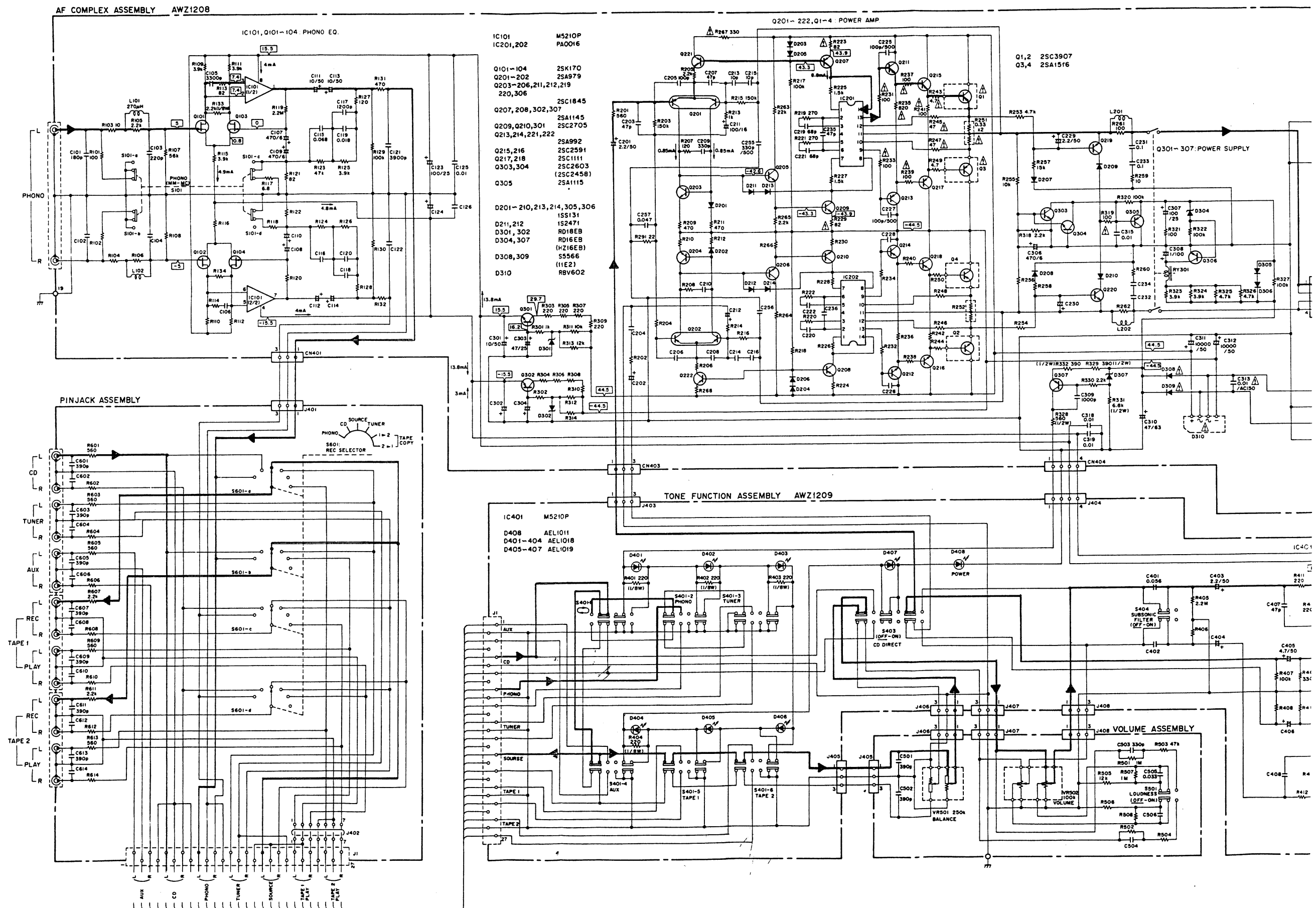
PA0016

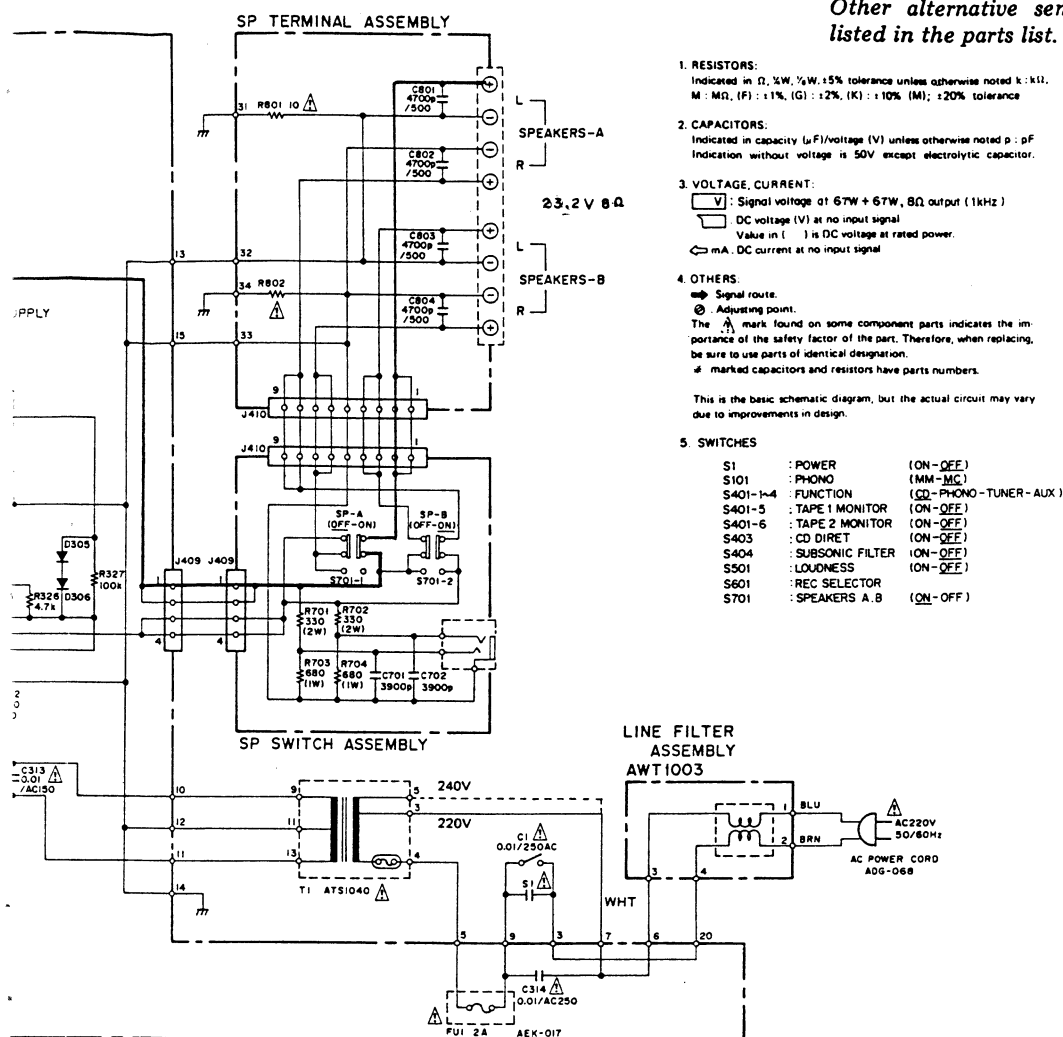


2SA1145
2SC2705



D





NOTE:

The indicated semiconductors are representative ones only. Other alternative semiconductors may be used and are listed in the parts list.

1. RESISTORS:
Indicated in Ω, %W, %W, 5% tolerance unless otherwise noted k: kΩ, M: MΩ, (F): ±1%, (G): ±2%, (K): ±10% (M): ±20% tolerance

2. CAPACITORS:
Indicated in capacity (μF)/voltage (V) unless otherwise noted p: pF
Indication without voltage is 50V except electrolytic capacitor.

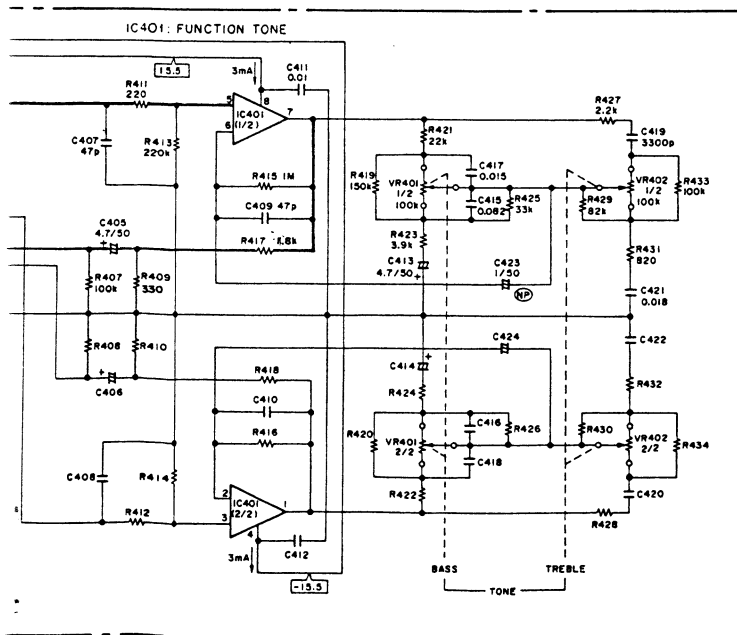
3. VOLTAGE, CURRENT:
V: Signal voltage at 67W + 67W, 8Ω output (1kHz)
V: DC voltage (V) at no input signal
Value in () is DC voltage at rated power.
mA: DC current at no input signal

4. OTHERS:
Signal route.
Adjusting point.
The mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

5. SWITCHES

S1	: POWER	(ON-OFF)
S101	: PHONO	(MM-MC)
S401-1-4	: FUNCTION	(CD-PHONO-TUNER-AUX)
S401-5	: TAPE 1 MONITOR	(ON-OFF)
S401-6	: TAPE 2 MONITOR	(ON-OFF)
S403	: CD DIRECT	(ON-OFF)
S404	: SUBSONIC FILTER	(ON-OFF)
S501	: LOUDNESS	(ON-OFF)
S601	: REC SELECTOR	(ON-OFF)
S701	: SPEAKERS A, B	(ON-OFF)



5. ELECTRICAL PARTS LIST

NOTES:

- When ordering resistors, first convert resistance values into code form as shown in the following examples.
 Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).
 560Ω 56 × 10¹ 561 RD4PS 5 6 1 J
 47kΩ 47 × 10³ 473 RD4PS 4 7 3 J
 0.5Ω 0R5 RN2H 0 5 K
 1Ω 010 RS1P 0 1 0 K
 Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).
 5.62kΩ 562 × 10¹ 5621 RN4SR 5 6 2 1 F
 The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
 For your Parts Stock Control, the fast moving items are indicated with the marks ** and *.
 ** GENERALLY MOVES FASTER THAN *
 This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
 Parts marked by " $\odot$ " are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

Miscellaneous Parts

P.C. BOARD ASSEMBLIES

Mark	Symbol & Description	Part No.
	AF complex assembly	AWZ1208
	Tone, Function assembly	AWZ1209
	LINE filter assembly	AWT1003
	Volume assembly	Non supply
	Pin jack assembly	Non supply
	Speaker switch assembly	Non supply
	SP terminal assembly	Non supply

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
Δ **	Q3, Q4 Transistor	2SA1516
Δ **	Q1, Q2 Transistor	2SC3907

SWITCHES

Mark	Symbol & Description	Part No.
Δ **	S1 Push switch (POWER)	ASG-552
**	S601 Slide rotary switch (REC SELECTOR)	ASU1001

TRANSFORMER

Mark	Symbol & Description	Part No.
Δ *	T1 Power transformer (220/240V)	ATS1040

CAPACITOR

Mark	Symbol & Description	Part No.
Δ	C1 Power capacitor (0.01/AC400V)	ACG1003

OTHERS

Mark	Symbol & Description	Part No.
Δ	AC power cord	ADG-068
Δ **	FU1 Fuse (T2A/250V)	AEK-017

AF Complex Assembly (AWZ1208)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
**	IC101	M5210P
**	IC201, IC202	PA0016
**	Q217, Q218	2SA1111
**	Q305	2SA1115
**	Q207, Q208, Q302, Q307	2SA1145
**	Q201, Q202	2SA979
**	Q213, Q214, Q221, Q222	2SA992
**	Q203-Q206, Q211, Q212, Q219, Q220, Q306	2SC1845
**	Q215, Q216	2SC2591
**	Q303, Q304	2SC2603
**	Q209, Q210, Q301	(2SC2458) 2SC2705
**	Q101-Q104	2SK170

Mark	Symbol & Description	Part No.
Δ *	D310	R8V602
*	D304, D307	RD16EB (HZ16EB)
*	D301, D302	RD18EB
Δ *	D308, D309	S5566 (11E2)
*	D201-D210, D213, D214, D305, D306	1S5131
*	D211, D212	1S2471

SWITCH, RELAY

Mark	Symbol & Description	Part No.
**	S101 Push switch (MM-MC)	ASG1012
**	RY301 Relay (PROTECTION)	ASR-112 (ASR-107) (ASR-109)

COILS

Mark	Symbol & Description	Part No.
	L201, L202 AF choke coil	ATH1009
	L101, L102 Inductor	ATH1010

CAPACITORS

Mark	Symbol & Description	Part No.
Δ	C313 (0.01/AC150)	ACG-019
Δ	C314 (0.01/AC400)	ACG1003
	C311, C312 (10000/50)	ACH1020
	C213-C216	CCCSL100D50
	C205, C206	CCCSL101J50
	C225-C228	CCCSL101K500
	C203, C204, C207, C208, C235, C236	CCCSL470J50
	C219-C222	CCCSL680J50
	C101, C102	CCDSL181J50
	C103, C104	CCDSL221J50
	C308	CEAS010M100
	C111-C114, C301, C302	CEAS100M50
	C211, C212	CEYA101M16
	C123, C124, C307	CEAS101M25
	C229, C230	CEAS2R2M50
	C201, C202	CEYA2R2M50
	C303, C304	CEAS470M25
	C310	CEAS470M63
	C107-C110, C306	CEAS470M6
	C309	CKCYB102K50
	C209, C210	CKCYB331K50
	C315, C318, C319	CKCYF103Z50
	C255, C256	CKDYB331K500
	C125, C126	CKDYF103Z50
	C257	CKDYF473Z50
	C231-C234	CQMA104K50
	C117, C118	CQMA122J50
	C119, C120	CQMA183J50
	C105, C106	CQMA332K50
	C121, C122	CQMA392K50
	C115, C116	CQMA683J50

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
Δ	R251, R252 (0.33Ωx2)	ACN-139
	R328, R329, R331, R332	RD1/2PM□□□J
Δ	R223, R224, R229, R230, R235, R236, R245-R248, R259-R262, R267, R268, R319	RD1/4PMF□□□J
Δ	R231-R234, R237-R244, R249, R250	RFA1/4PS□□□J
	R201, R202, R203, R204, R213-R216	RDR1/4PM□□□J
	Other resistors	RD1/4PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	Terminal 2P (PHONO)	AKB-119
	Transistor socket	AKH-017

Tone, Function Assembly (AWZ1209)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
**	IC401	M5210P
*	D408 LED (POWER)	AEL1011
*	D401-D404 LED (CD, PHONO, TUNER, AUX)	AEL1018
*	D405-D407 LED (TAPE1, TAPE2, CD DIRECT)	AEL1019

SWITCH

Mark	Symbol & Description	Part No.
**	S401 Push switch (FUNCTION, TAPE1, TAPE2)	ASG1013
**	S404 Push switch (SUBSONIC FILTER)	SEAV2S
**	S403 Push switch (CD DIRECT)	SECV6S

CAPACITORS

Mark	Symbol & Description	Part No.
	C407-C410	CCCSL470J50
	C423, C424	CEANP010M50
	C403, C404	CEAS2R2M50
	C405, C406, C413, C414	CEAS4R7M50
	C411, C412	CKCYF103Z50
	C417, C418	CQMA153K50
	C421, C422	CQMA183K50
	C419, C420	CQMA332K50
	C401, C402	CQMA563K50
	C415, C416	CQMA823K50

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
★	VR401, VR402 Variable resistor (TONE, 100kΩ)	ACT1019
	R401—R404 Other resistors	RD1/8PM221J RD1/4PM□□□J

Line Filter Assembly (AWT1003)

COIL

Mark	Symbol & Description	Part No.
△	L1 Line filter	ATF-151

Volume Assembly

SWITCH

Mark	Symbol & Description	Part No.
★★	S501 Push switch (LOUDNESS)	SEAV2S

CAPACITORS

Mark	Symbol & Description	Part No.
	C503, C504	CKCYB331K50
	C501, C502	CKCYB391K50
	C505, C506	CQMA333K50

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
★	VR502 Variable resistor (VOLUME, 100kΩ)	ACT1016
★	VR501 Variable resistor (BALANCE, 250kΩ)	ACU1008
	R501—R508	RD1/4PM□□□J

Pin Jack Assembly

SWITCH

Mark	Symbol & Description	Part No.
★★	S601 Remote slide switch (REC SELECTOR)	ASU1002

CAPACITORS

Mark	Symbol & Description	Part No.
	C601—C614	CKDYB391K50

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
	R603—R614	RD1/4PM□□□J
	R601, R602	RDR1/4PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	Terminal 4P (TAPE1, TAPE2)	AKB-115
	Terminal 6P (CD, TUNER, AUX)	AKB-117

Speaker Switch Assembly

SWITCH

Mark	Symbol & Description	Part No.
★★	S701 Push switch (SPEAKER A/B)	SUL6LXBXC

CAPACITORS

Mark	Symbol & Description	Part No.
	C701, C702	CKCYB392K50

RESISTORS

Mark	Symbol & Description	Part No.
	R703, R704	RS1PMF681J
	R701, R702	RS2LMF331J

OTHERS

Mark	Symbol & Description	Part No.
	Phone jack (PHONES)	AKN1002

SP Terminal Assembly

CAPACITORS

Mark	Symbol & Description	Part No.
	C801—C804	CKDYB472K50

RESISTORS

Mark	Symbol & Description	Part No.
△	R801, R802	RD1/4PMF100J

OTHERS

Mark	Symbol & Description	Part No.
	Terminal 8P (SPEAKERS)	AKE-111

6. FOR HE AND HB TYPES

6.1 CONTRAST OF MISCELLANEOUS PARTS

NOTES:

- Parts without part number cannot be supplied.
- The △ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.
- ★★ GENERALLY MOVES FASTER THAN ★
- This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- Parts marked by "◎" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

The A-44 (BK)/HE and HB types are the same as A-44 (BK)/HEZ type with the exception of the following sections:

Mark	Symbol & Description	Part No.			Remarks
		A-44 (BK)/ HEZ type	A-44 (BK)/ HE type	A-44 (BK)/ HB type	
	AF complex assembly	AWZ1208	AWZ1237	AWZ1237	(For Speaker terminal)
	SP Terminal assembly	Non supply	Non supply	Non supply	
	Pin jack assembly	Non supply	Non supply	Non supply	
	Line filter assembly	AWT1003			
	Screw	ABA-115			
	Operating instructions (German)	ARC1018			
	Operating instructions (English/German/French/Italian)		ARE1037	ARE1037	
	AC power cord	ADG-068	ADG-068	ADG-063	
△ ★★	FU1 Fuse (T2A/250V)	AEK-017	AEK-017	AEK-511	

6.2 ELECTRICAL PARTS LIST

NOTES:

- When ordering resistors, first convert resistance values into code form as shown in the following examples.
 Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).
 560Ω 56 × 10¹ 561 RD4PS 5 6 1 J
 47kΩ 47 × 10³ 473 RD4PS 4 7 3 J
 0.5Ω 0R5 RN2H 0 R 5 K
 1Ω 010 RS1P 0 1 0 K
 Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).
 5.62kΩ 562 × 10¹ 5621 RN4SR 5 6 2 1 F
 • The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
 • For your Parts Stock Control, the fast moving items are indicated with the marks ** and *.
 ** GENERALLY MOVES FASTER THAN *
 This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
 • Parts marked by " $\odot$ " are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

AF Complex Assembly (AWZ1237)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
**	IC101	M5210P
**	IC201, IC202	PA0016
**	Q217, Q218	2SA1111
**	Q305	2SA1115
**	Q207, Q208, Q302, Q307	2SA1145
**	Q201, Q202	2SA979
**	Q213, Q214, Q221, Q222	2SA992
**	Q203-Q206, Q211, Q212, Q219, Q220, Q306	2SC1845
**	Q215, Q216	2SC2591
**	Q303, Q304	2SC2603 (2SC2458)
**	Q209, Q210, Q301	2SC2705
**	Q101-Q104	2SK170
Δ *	D310	RBV602
*	D304, D307	RD16EB (HZ16EB)
*	D301, D302	RD18EB (HZ18EB)
Δ *	D308, D309	S5566 (11E2)
*	D201-D210, D213, D214, D305, D306	1SS131
*	D211, D212	1S2471

SWITCH, RELAY

Mark	Symbol & Description	Part No.
**	S101 Push switch (MM-MC)	ASG1012
**	RY301 Relay (PROTECTION)	ASR-112 (ASR-107) (ASR-109)

COILS

Mark	Symbol & Description	Part No.
	L201, L202 AF choke coil	ATH1004

CAPACITORS

Mark	Symbol & Description	Part No.
Δ	C313 (0.01/AC150)	ACG-019
Δ	C314 (0.01/AC400)	ACG1003
	C311, C312 (10000/50)	ACH1020
	C213-C216	CCCSL100D50
	C205, C206	CCCSL101J50
	C225-C228	CCCSL101K500
	C203, C204, C207, C208, C235, C236	CCCSL470J50
	C219-C222	CCCSL680J50
	C103, C104	CCDSL221J50
	C308	CEAS010M100
	C111-C114, C301, C302	CEAS100M50
	C211, C212	CEYA101M16
	C123, C124, C307	CEAS101M25
	C229, C230	CEAS2R2M50
	C201, C202	CEYA2R2M50
	C303, C304	CEAS470M25
	C310	CEAS470M63
	C107-C110, C306	CEAS470M6
	C309	CKCYB102K50
	C209, C210	CKCYB331K50
	C315	CKCYF103Z50
	C125, C126	CKDYF103Z50
	C231-C234	CQMA104K50
	C117, C118	CQMA122J50
	C119, C120	CQMA183J50
	C105, C106	CQMA332K50
	C121, C122	CQMA392K50
	C115, C116	CQMA683J50

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
Δ	R251, R252 (0.33Ωx2)	ACN-139
	R328, R329, R331, R332	RD1/2PM□□□J
Δ	R235, R236, R253, R254, R259-R262, R267, R268	RD1/4PMF□□□J
Δ	R223, R224, R229, R230, R231-R234, R237-R250, R319	RFA1/4PS□□□J
	R201-R204, R213-R216	RDR1/4PM□□□J
	Other resistors	RD1/4PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	Terminal 2P (PHONO)	AKB-119
	Transistor socket	AKH-017

Pin Jack Assembly

SWITCH

Mark	Symbol & Description	Part No.
**	S601 Remote slide switch (REC SELECTOR)	ASU1002

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
	R603-R614	RD1/4PM□□□J
	R601, R602	RDR1/4PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	Terminal 4P (TAPE1, TAPE2)	AKB-115
	Terminal 6P (CD, TUNER, AUX)	AKB-117

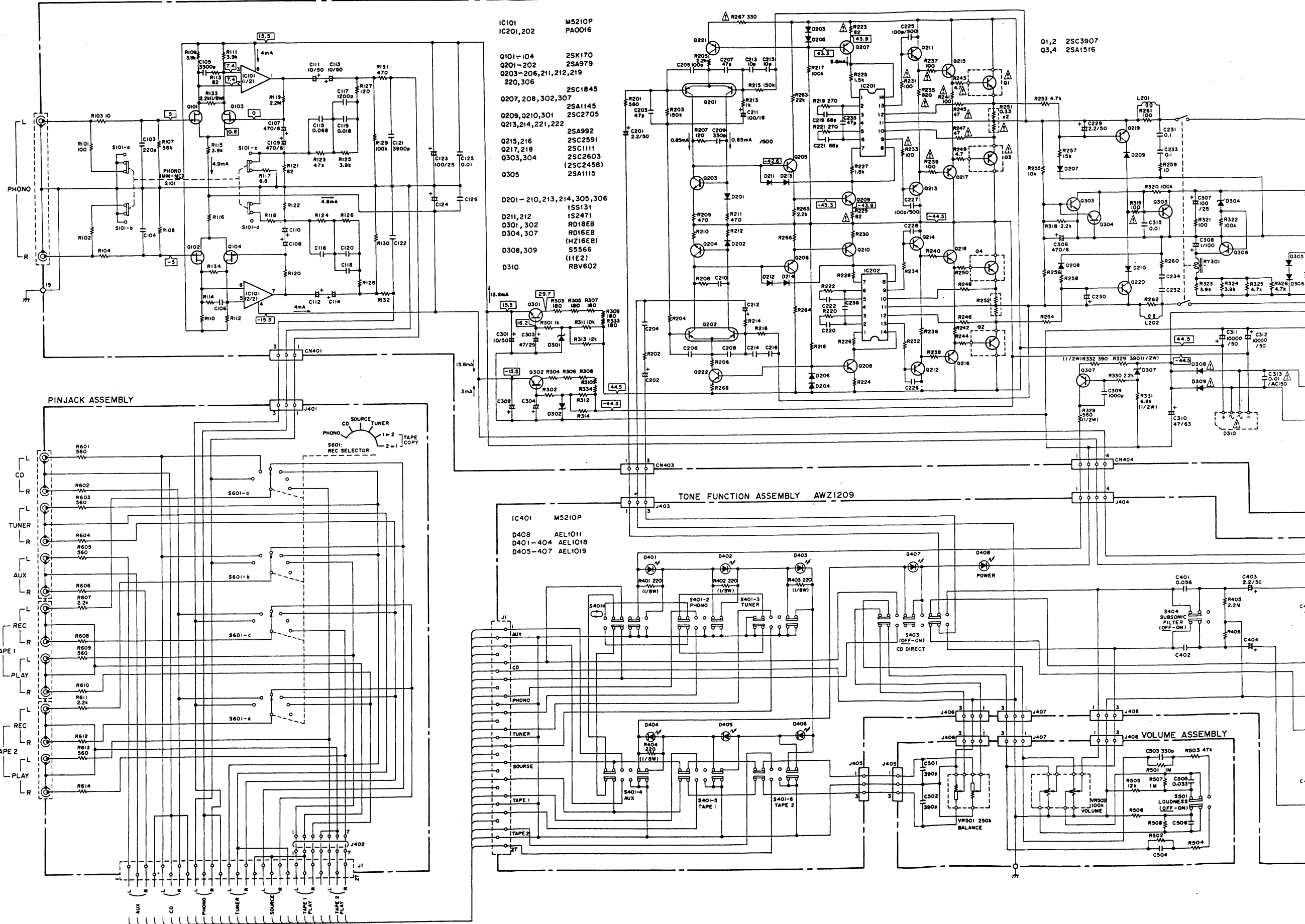
SP Terminal Assembly

OTHERS

Mark	Symbol & Description	Part No.
	Terminal 8P (SPEAKERS)	AKE-111

6.3 SCHEMATIC DIAGRAM

AF COMPLEX ASSEMBLY AWZ1237



4

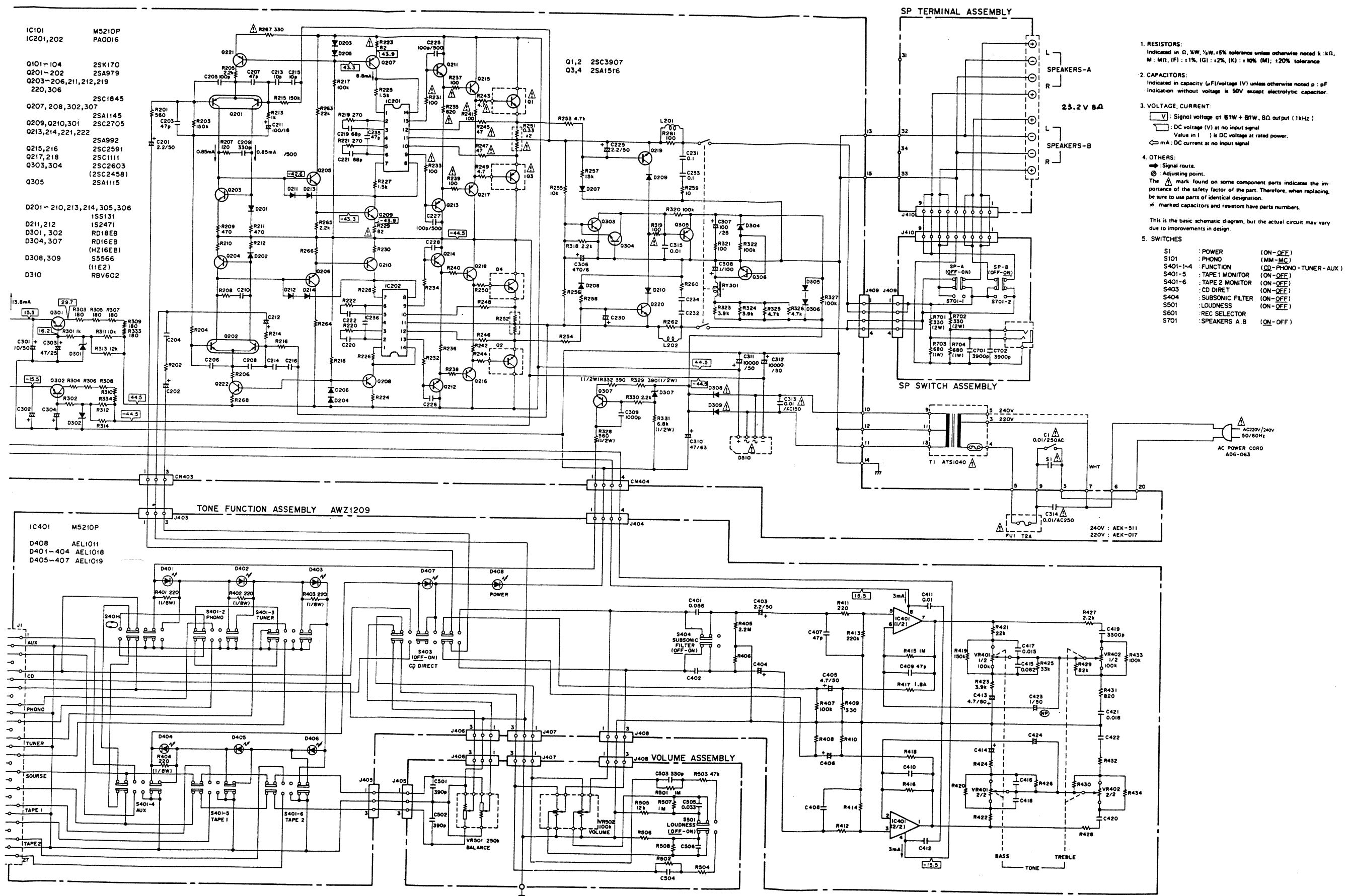
5

6

7

8

9

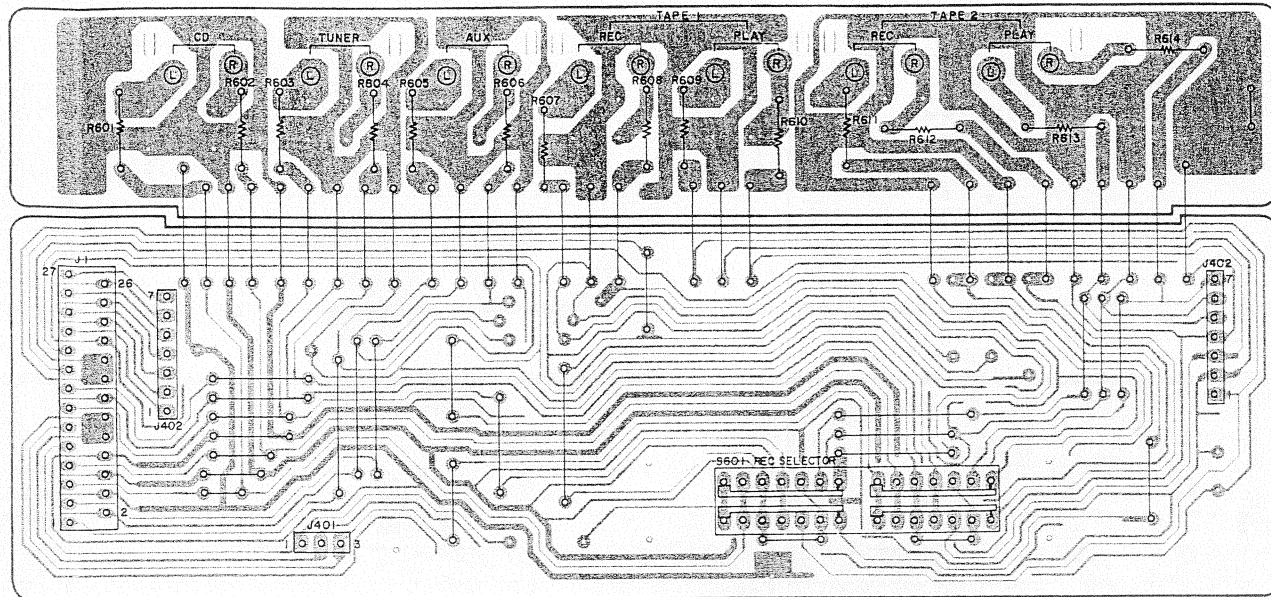


D



Q101	Q103	IC101	Q104 Q102	Q202	Q204	Q201 Q203	Q303 ~ 305	Q205 Q209	Q302 Q306	IC201 Q207 Q221	Q301	Q307
		Q216	Q222 Q208	IC202	Q214	Q206 Q210		Q213 Q217			Q211 Q215	Q219
		Q2	Q212			Q4 Q218	Q220			Q3		Q1

PINJACK ASSEMBLY



A

B

C

D

SP TERMINAL ASSMBLY

